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Novak Druce + Quigg LLP
CityPlace Tower, 525 Okeechobee Blvd.
Fifteenth-Floor
WEST PALM BEACH, FL 33401

EXAMINER	
BORSETTI, GREG	

ART UNIT	PAPER NUMBER
2626	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/777,263	AOKI ET AL.	
	Examiner	Art Unit	
	GREG A. BORSETTI	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 March 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Claims 17-24 are pending.

2. Claims 21-24 have been added.

Response to Arguments

3. Applicant argues "According to In re Bilski, the applicable test to determine whether a claim is drawn to a patent-eligible process under § 101 is whether: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing.4 It is important to note that the machine-or-transformation test is not a physicality test - i.e., a claim can still be patentable even if it does not recite sufficient physical steps... The present invention is tied to a particular computer-implemented process used in a computer, mainly a method for performing morphological analysis on a text string in natural language processing in a computer system. The present invention receives text string to be processed and transforms the text string by decomposing the text string that results in an optimum token string being stored in a complex word dictionary..." (Remarks, Pages 5-6, ¶4 and ¶ 1)

The Examiner disagrees. Firstly, the method is not tied to a machine because a preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See In re Hirao, 535 F.2d 67, 190

USPQ 15 (CCPA 1976) and Kropa v. Robie, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). Secondly, it is true that the machine or transformation test is not a physicality test, however the transformation must be a physical transformation to ensure that the claim is not directed to a judicial exception in the case that it does not qualify under the "machine" portion of the test. The argument is not persuasive.

4. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., wherein the test string is in an agglutinative language and comprises more than one compound word, wherein each compound word comprises a linguistic unit having a semantic meaning" (Remarks, Pages 7-9) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 17-20, 23-24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

6. Under the most recent interpretation of the Interim Guidelines regarding 35 U.S.C.101, a method claim must (1) be tied to another statutory class or (2) transform

underlying subject matter to a different state or thing. If no transformation occurs, the claim(s) should positively recite the other statutory class to which it is tied to qualify as a statutory process under 35 U.S.C. 101. As for guidance to areas of statutory subject matter, see 35 U.S.C. 101 Interim Guidelines (with emphasis of the Clarification of "processes" under 35 USC 101); As an example, the claim(s) could identify the apparatus that accomplishes the method steps, or positively recite the subject matter that is being transformed. There is no physical transformation and no positive recitation of another statutory category within the body of the claims to satisfy 35 USC 101.

7. Claims 23-24 are described in the specification, Page 8, ¶ 0041, ...*Among the above units, the token list generating unit 11 and the token string selecting unit 13 are virtual software blocks implemented by controlling the CPU 101 with a program expanded in the main memory 103 as shown in Figure 1*..., as purely software components. Therefore, the claims when treated as a whole, are more directed to a software embodiment than a hardware embodiment and is nonstatutory under 35 USC 101.

Claim Objections

8. Claims 17, 22, and 23 are objected to because of the following informalities: The newly amended subject matter in each of the claims recite "compound words" where there is no antecedent basis, nor support in the specification for "compound words". However, it is understood by the examiner that the "compound words" are the "complex

words" previously recited in the claim language and will be interpreted as such for the remainder of the office action. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frisch et al. (US Patent #4873634 hereinafter Frisch) in view of Baker et al. (US Patent # 5754972 hereinafter Baker) and further in view of Applicants admitted prior art (Background section) and further in view of Kwon et al. (NPL document "Korean large vocabulary continuous speech recognition with morpheme-based recognition units")

As per claim 17, Frisch teaches:

inputting the text string to be processed (Frisch, column 3, lines 25-35, *...an improved method for generating correctly spelled example compound words in response to the inputting by the user of a misspelled compound word...*);

decomposing the text string into tokens (Frisch, columns 4-5, lines 40-67, 1-51, *...decomposition of compound words...*);

determining whether each token is decomposable (Frisch, columns 4-5, lines 40-67, 1-51, ...*Once all the possible initial components have been identified, the remaining portion of the compound word is subjected recursively to the same substring-matching procedure against the dictionary, but the compounding attributes must be those of a middle or back component*...).

Frisch fails to teach, but Baker teaches:

selecting whether or not to decompose a decomposable complex word in response to a request from an application that utilizes a morphological analysis result (Baker, columns 5-6, lines 63-67, 1-5, Baker teaches the use of user input to determine when to decompose a compound (complex) word for an application in speech recognition.);

if a token is not decomposable, registering the non-decomposable token on a token list (Baker, column 9, lines 51-67, ...*generates a candidate list 114 and displays that list 116, in response to the characters and formatives entered by the user*...).

It would have been obvious to someone of ordinary skill in the art at the time of the invention to combine Baker with the Frisch device to have a selection process in the decomposition of compound word to increase the word recognition accuracy on compound words in speech recognition

Frisch and Baker fail to teach, but Applicants admitted prior art teaches:

selecting the optimum token string based on the token list

(Background, Page 3, ¶ 0007, Fig. 12).

It would have been obvious to someone of ordinary skill in the art at the time of the invention to combine Applicants admitted prior art with the Baker and Frisch device to generate the most likely token string, to define the decomposable complex word such that it can be recognized efficiently from an application using the dictionary

Frisch, Baker, and Applicants admitted prior art fail to teach, but Kwon teaches:

wherein the text string is in an agglutinative language and comprises more than one compound word, wherein each compound word comprises a linguistic unit having a semantic meaning; (Page 291, columns 1-2, the text is in Korean, which is agglutinative. A morphological analysis tool is used to divide a sentence into morphemes with POS tags and decompose compound nouns. The compound words are broken down into morphemes, which inherently have semantic meaning. Kwon fails to specifically teach that there is more than one compound word per text string, but it would have been obvious to someone of ordinary skill in the art at the time of the invention that there could have been more than one compound word per input string because Kwon operates as part of a continuous speech recognizer and it would have been obvious that more than one compound word could easily exist in a sentence. Page 291, column 1, ...*Morphological analysis that divides a sentence into morphemes*...)

It would have been obvious to someone of ordinary skill in the art at the time of the invention to combine Kwon with Frisch, Baker, and Applicants admitted prior art to

reduce the out of vocabulary rate due by using a merged morpheme unit for recognition. (abstract)

As per claim 18, claim 17 is incorporated and Frisch and Baker fail to teach, but Applicants admitted prior art teaches:

wherein a master dictionary is referenced when decomposing the text string into tokens (Background, Page 3, ¶ 0006, Fig 11)

It would have been obvious to someone of ordinary skill in the art at the time of the invention to combine Applicants admitted prior art with the Baker and Frisch device because the substitution of one known elements for another would have yielded predictable results to one of ordinary skill in the art at the time of the invention. The Frisch and Baker device requires a dictionary for comparison. It would have been obvious to someone of ordinary skill in the art to use the master dictionary provided in Applicants admitted prior art because the master dictionary is a pre-segmented dictionary of tokens and their attributes (Page 3, ¶ 0006). Therefore, since the dictionary is already segmented, it would have been obvious to someone of ordinary skill in the art at the time of the invention to combine Applicants admitted prior art with the Baker and Frisch device, because the pre-segmented dictionary reduces processing in the generation of the most likely token string to define the decomposable complex word.

As per claim 19, claim 17 is incorporated and Frisch and Baker fail to teach, but Applicants admitted prior art teaches:

wherein a grammar dictionary is referenced when selecting the optimum token string on the bases of the token list (Background, Page 3, ¶ 0007).

It would have been obvious to someone of ordinary skill in the art at the time of the invention to combine Applicants admitted prior art with the Baker and Frisch device because the substitution of one known elements for another would have yielded predictable results to one of ordinary skill in the art at the time of the invention. The Frisch and Baker device requires a dictionary for comparison. It would have been obvious to someone of ordinary skill in the art to use the master dictionary provided in Applicants admitted prior art because the master dictionary is a pre-segmented dictionary of tokens and their attributes (Page 3, ¶ 0006). Therefore, since the dictionary is already segmented, it would have been obvious to someone of ordinary skill in the art at the time of the invention to combine Applicants admitted prior art with the Baker and Frisch device, because the pre-segmented dictionary reduces processing in the generation of the most likely token string to define the decomposable complex word.

As per claim 20, claim 18 is incorporated and Frisch fails to teach, but Baker teaches:

wherein whether a token is decomposable is determined by determining whether a decomposable flag for the token in the master dictionary is set (Baker, column 9, lines 32-35, *...the compound word recognizer 82 is responsive to a user command to decompose, into its identified formatives, a previously identified compounded word...*, the word is known to be a compound word, therefore it would have been obvious that a flag or an indicator would be set to indicate that the compound

word is decomposable such that the user could choose to decompose the word.)

It would have been obvious to someone of ordinary skill in the art at the time of the invention to combine Baker with the Frisch device to have a selection process in the decomposition of compound word to increase the word recognition accuracy on compound words in speech recognition.

As per claim 21, Frisch, Baker, Applicants admitted prior art and Kwon fail to specifically teach, but Kwon suggests:

wherein the agglutinative language comprises Japanese. (Page 288, column 2, ...*A Japanese LVCSR system, using a morpheme based trigram LM*... Kwon does not specifically work on Japanese text, but it would have been obvious to someone of ordinary skill that since morpheme based approaches had been used for Japanese and other languages, Kwon's decomposition could have been adapted for these languages.)

10. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable by Yokogawa (5,225,981) in view of in view of Baker et al. (US Patent # 5754972 hereinafter Baker) and further in view of Applicants admitted prior art (Background section) and further in view of Kwon et al. (NPL document "Korean large vocabulary continuous speech recognition with morpheme-based recognition units")

As per claim 22, Yokogawa teaches:

a dictionary unit storing header words and attribute information of the header words, (column 12 lines 23-37, ...a word dictionary stores grammatical information for each entry word, including inflectional information, as well as a highest preference flag...);

a token list generating unit for referencing data in said dictionary unit, extracting tokens that can form natural language text from said input text string, and registering said extracted tokens in a token list (column 10 lines 44-55 and column 12 lines 1-15, *a morphological analysis section processes the sentence by referring to the word dictionary, this analysis saved in the retrieved dictionary buffer*); and

a token string selecting unit for selecting optimum token strings for composing said natural language text on the basis of the token list generated by said token list generating module, (column 10 line 67 – column 11 line 5 and column 13 lines 34-37 and lines 49-61, the input character array is processed in terms of the highest preference flag (imposed condition),then a contradiction for the highest preference flag is eliminated; next, the input data and the dictionary information are sent to the parsing section I and then II, where structure is applied to the data to determine a solution, or a parse tree).

to input text string to be processed; (abstract, ...a parsing analyzer for conducting morphological analysis for an inputted sentence...)

to decomposing the text string into tokens; (column 10 lines 56-68, ...*The parsing section I 1020 is a functional section that performs parsing for the surface structure*...)

when it is selected not to decompose a decomposable complex word, to determine whether each token is decomposable; (column 12 lines 23-37 and column 13 lines 34-37, the word dictionary contains an entry for a highest preference flag, which uses a '1' or '0' to indicate weak or strong coupling (decomposable). Also, if a strong coupling does not exist between possible compound words or phrases, individual words are considered (indecomposable words)).

to select the optimum token string based on the token list. (column 10 line 67 – column 11 line 5 and column 13 lines 34-37 and lines 49-61, the input character array is processed in terms of the highest preference flag (imposed condition),then a contradiction for the highest preference flag is eliminated; next, the input data and the dictionary information are sent to the parsing section I and then II, where structure is applied to the data to determine a solution, or a parse tree).

Yokogawa fails to teach, but Baker teaches:

wherein said token list generating unit comprises program code enabled to select whether or not to decompose a decomposeable complex word in response to a request from an application that utilizes a morphological analysis result; (Baker, columns 5-6, lines 63-67, 1-5, Baker teaches the use of user input to determine when to decompose a compound (complex) word for an application in speech recognition. Baker, claim 14, teaches a computer-implemented method where a computer inherently must be programmed by code for it to function as intended.);

if a token is not decomposable, to register the non-decomposable token on a token list (Baker, column 9, lines 51-67, *...generates a candidate list 114 and displays that list 116, in response to the characters and formatives entered by the user...*).

It would have been obvious to someone of ordinary skill in the art at the time of the invention to combine Baker with the Yokogawa device to have a selection process in the decomposition of compound word to increase the word recognition accuracy on compound words in speech recognition.

Yokogawa and Baker fail to teach, but Kwon teaches:

wherein the text string is in an agglutinative language and comprises more than one compound word, wherein each compound word comprises a linguistic unit having a semantic meaning; (Page 291, columns 1-2, the text is in Korean, which is agglutinative. A morphological analysis tool is used to divide a sentence into morphemes with POS tags and decompose compound nouns. The compound words are broken down into morphemes, which inherently have semantic meaning. Kwon fails to specifically teach that there is more than one compound word per text string, but it would have been obvious to someone of ordinary skill in the art at the time of the invention that there could have been more than one compound word per input string because Kwon operates as part of a continuous speech recognizer and it would have been obvious that more than one compound word could easily exist in a sentence. Page 291, column 1, *...Morphological analysis that divides a sentence into morphemes...*)

It would have been obvious to someone of ordinary skill in the art at the time of the invention to combine Kwon with Yokogawa and Baker to reduce the out of vocabulary rate due by using a merged morpheme unit for recognition. (abstract)

11. Claims 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable by Yokogawa (5,225,981)

As per claim 23, Yokogawa teaches:

token string selection means for selecting optimum token strings for composing said natural language text on the basis of the token list generated by said token list generation means. (column 10 line 67 – column 11 line 5 and column 13 lines 34-37, the input character array is processed in terms of the highest preference flag (imposed condition),then a contradiction for the highest preference flag is eliminated. After the morphological analysis, the input data and the dictionary information are sent to the parsing section I and then II, where structure is applied to the data to determine a solution, or a parse tree).

Yokogawa fails to explicitly teach, but suggests:

token list generation means for decomposing said natural language text to be processed into tokens that are components of the natural language text and registering them on a token list except tokens decomposable into smaller tokens; and (Yokogawa teaches a decomposition of natural language text into token and registering

the tokens on a list on column 10 lines 44-55, ...The English data after the parsing in the parsing section I 1020 are sent together with the parsing information thereof to a parsing section II 1022... A plausible parsing tree for the English sentence is thus prepared to form the structure thereof. These parsing rules are also stored in a parsing rule file 1036... Yokogawa does not explicitly disclose registering tokens except tokens decomposable into smaller tokens. However, Yokogawa does disclose considering individual words when possible compound words or phrases do not have a strong coupling (column 13 lines 34-47). In Yokogawa, a morphological analysis is performed on input text, and a weak or strong coupling between constituent words of compound words or phrases is determined. Using this information, a possible parse tree is determined then used for machine translation. Individual words that are constituents of determined compound words or phrases are not considered, thus reducing the processing.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to register tokens except tokens corresponding to decomposable header words from said extracted tokens in Yokogawa, since it would enable the system to discard words or phrases with weak coupling, i.e. words or phrases that are not likely to be correct compound words or phrases, thus reducing system processing.

As per claim 24, claim 23 is incorporated and Yokogawa discloses the morphological analyzer according to claim 23, however Yokogawa does not explicitly disclose wherein said token list generation means selectively controls whether or not token

decomposeable into smaller tokens are excluded from tokens registered on said token list in accordance with the given conditions imposed on the morphological analysis. However, Yokogawa does disclose considering individual words when possible compound words or phrases do not have a strong coupling (column 13 lines 34-47). In Yokogawa, a morphological analysis is performed on input text, and a weak or strong coupling between constituent words of compound words or phrases is determined. Using this information, a possible parse tree is determined then used for machine translation. Individual words that are constituents of determined compound words or phrases are not considered, thus reducing the processing.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to selectively control whether or not tokens decomposable into smaller tokens are excluded from tokens registered on said token list in accordance with conditions composed on the morphological analysis in Yokogawa, since it would enable the system to discard words or phrases with weak coupling, i.e. words or phrases that are not likely to be correct compound words or phrases, thus reducing system processing.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Refer to PTO-892, Notice of References Cited for a listing of analogous art.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREG A. BORSETTI whose telephone number is (571)270-3885. The examiner can normally be reached on Monday - Thursday (8am - 5pm Eastern Time).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, RICHEMOND DORVIL can be reached on 571-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Greg A. Borsetti/
Examiner, Art Unit 2626

/Talivaldis Ivars Smits/
Primary Examiner, Art Unit 2626

4/24/2009